

REMARKS

Applicant appreciates the time and consideration exhibited by Examiner Kerns during a telephonic interview on March 26, 2003. The structure of the claimed mold was discussed and the cited prior art. The subject of the interview is discussed in more detail below.

In the Office Action mailed December 12, 2002, the abstract is objected to because the phrase "shadow region" of the immersion nozzle is unclear. The abstract is amended to remove the unclear term.

Claims 11, 14, 16, and 17 are objected to as containing minor informalities. The claims have been amended in accordance with the Examiner's suggestions. Accordingly, it is respectfully requested that the objection to claims 11, 14, 16, and 17, now be withdrawn.

Claims 11-20 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The claims have been extensively amended for clarification. In view of the amendments, it is respectfully requested that the rejection of claims 11-20 under 35 U.S.C. §112, second paragraph, now be withdrawn.

Claims 11-20 stand rejected under 35 U.S.C. §103 as unpatentable over U.S. Patent No. 4,955,428 (Schrewe) in view of U.S. Patent No. 4,716,955 (Fastert).

Before discussing the rejections of the claims over the prior art, a review of the present invention is appropriate. The present invention is directed to an apparatus and method for producing thin slabs. According to the present invention, a mold for producing thin slabs includes two opposing broad faces 21 and two opposing narrow faces 22. Each of the broad faces 21 includes a central part 23 and two side parts 24, 25. From an upper part of the mold to a distance from the upper part of the mold (i.e., a charging region of the mold), the central parts 23 run conically toward each other in the strand conveying direction (p. 7, line 23 to pg. 8, line 4).

Transition parts 26 and 27 in the shape of wedges are arranged between the central part 23 and the side parts 24, 25 of the broad faces 21, respectively, in the charging region of the mold.

In the section of the mold from the end of the charging region to the mouth at the strand exit end of the mold, the broad faces 21 and narrow faces 22 maintain the same cross section (see pg. 8, lines 14-17). Therefore the lower region of the mold corresponds to the strand format at the mouth of the mold. This reduces the load on the strand shall in the guiding rollers downstream of the mold and minimizes the risk of longitudinal cracks and break-outs (see pg. 3, lines 8-12). In addition this form allows simple introduction and delivering of the cold strand when starting up the continuous cast installation. (pg. 4, lines 10-12).

Furthermore, the guiding rollers downstream of the mold include split rollers including central roller 43 and side rollers 44, 45 arranged at an angle relative to each other.

Independent claim 11 has been amended to clarify the relationship between the central part 23, the side parts 24, 25, and the transition parts 26, 27 (i.e., tapered connecting pieces) of the broad faces of the mold and how the strand is formed thereby. Independent claim 11 recites "the mold includes tapered connecting pieces joined with the central parts and side parts of the broad faces".

Schrewe discloses a device for the continuous casting of slabs including a mold 3 which produces a strand having outwardly-bulging cross-sections 12, 13 (see Fig. 2 and col. 3, lines 18-20). However, Schrewe fails to teach or suggest the claimed mold configuration.

Fastert fails to teach or suggest what Schrewe lacks. Fastert discloses a continuous casting method in which a mold 1 has a pair of opposed side walls 2 and opposed end walls 3. According to Fastert, the side walls 2 converge and the end walls 3 diverge toward the mold exit. Figs. 6, 7, and 8 of Fastert disclose mold having an inlet opening which includes a central portion

10 of variable thickness and a second portion 9 of constant thickness (see col. 6, lines 45-48). While Fastert discloses different shapes for the central portion, Fastert fails to disclose the specific configuration of the mold recited in claim 1 which requires broad faces having central parts, side parts, and tapered connecting pieces. Furthermore, Fastert discloses converging to a uniform thickness at the output of the mold. Therefore, even if Fastert is combined with Schrewe, the combined teachings fail to teach or suggest forming the broad face of the strand shell using the mold as recited in independent claim 1. The molds disclosed by Schrewe and Fastert do not have planar surfaces which taper conically toward each other up to 40% to 60% of the length of the mold, and tapered connecting pieces joined to the central part. Accordingly, neither Schrewe nor Fastert discloses that "the mold includes tapered connecting pieces joined with the central parts and side parts of the broad faces", as recited in independent claim 11. Accordingly, it is respectfully submitted that independent claim 11 is allowable over Schrewe in view of Fastert.

Independent claim 14 is directed to a continuous casting installation for producing a thin slab and has been amended to clarify the configuration of the central part, the planar side surfaces and the transitional parts on the broad side parts of the mold.

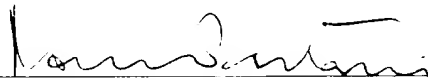
As stated above, neither Schrewe, Fastert, nor the combination thereof teach the claimed configuration of the mold. Accordingly, it is respectfully submitted that independent claim 14 is allowable over Schrewe in view of Fastert.

Dependent claims 12-13 and 15-20, each being dependent on one of independent claim 11 and 14, are allowable for at least the same reasons as independent claims 11 and 14.

The application is deemed to be in condition for allowance, and notice to that effect is respectfully solicited.

Respectfully submitted.
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